

Table S1. Physiological characteristics of *Shewanella* strains POL1 and POL2: ability to utilize different carbon sources and tube growth tests on selected substrates under aerobic and anaerobic conditions (The most intensively used carbon sources are shown in bold).

Carbon source	Ability to oxidize different carbon sources under anaerobic conditions examined using BIOLOG technology		Ability to grow on selected carbon sources under aerobic conditions measured by OD ₆₀₀ values ^a after 16–18 h of growth		Ability to grow on selected carbon sources under anaerobic conditions in medium containing FeOOH measured by OD ₆₀₀ values ^a and presence of Fe ²⁺ after 5 days of incubation ^b			
	POL1	POL2	POL1	POL2	POL1		POL2	
					Growth	Fe(II)	Growth	Fe(II)
L-Arabinose	+	+	+	+	n.d.			n.d.
D-Xylose	Weak	-	n.d.	n.d.	n.d.			n.d.
N-Acetyl-D-glucosamine	+	++	n.d.	n.d.	n.d.			n.d.
D-Glucosamine	+	weak	n.d.	n.d.	n.d.			n.d.
D-Ribose	Weak	-	n.d.	n.d.	n.d.			n.d.
Maltose	++	+	+++	++	++	+++	++	+++
Glucose	-	-	+	+	+	+	+	+
Sucrose	+	+	+++	++	++	+++	++	+++
Maltotriose	++	++	n.d.	n.d.	n.d.			n.d.
α-Cyclodextrin	+	+	n.d.	n.d.	n.d.			n.d.
β-Cyclodextrin	+	+	n.d.	n.d.	n.d.			n.d.
Gelatin	+	+	n.d.	n.d.	n.d.			n.d.
Mannan	Weak	-	n.d.	n.d.	n.d.			n.d.
Pectin	Weak	weak	n.d.	n.d.	n.d.			n.d.
Molasses	n.d.	n.d.	+++	+++	++	+++	++	+++
Starch	n.d.	n.d.	+	+	++	++	++	++
Dextran	n.d.	n.d.	-	-	+	++	+	+
Succinic acid	Weak	weak	n.d.	n.d.	n.d.			n.d.
L-Lactic acid	++	++	++	+	++	++	++	+++
Formic acid	+	+	n.d.	n.d.	n.d.			n.d.
Fumaric acid	Weak	weak	n.d.	n.d.	n.d.			n.d.
α-Ketobutyric acid	Weak	-	n.d.	n.d.	n.d.			n.d.
L-Malic acid	Weak	weak	n.d.	n.d.	n.d.			n.d.
Pyruvic acid	++	++	n.d.	n.d.	n.d.			n.d.
Methyl pyruvate	++	++	n.d.	n.d.	n.d.			n.d.
Sodium pyruvate	n.d.	n.d.	+++	+++	++	+++	++	+++
D-Galacturonic acid	Weak	-	n.d.	n.d.	n.d.			n.d.
Butyric acid	Weak	-	n.d.	n.d.	n.d.			n.d.
5-Keto-D-gluconic acid	Weak	-	n.d.	n.d.	n.d.			n.d.
Sodium acetate	-	-	+	+	+	+	+	+
Thymidine	Weak	weak	n.d.	n.d.	n.d.			n.d.
Uridine	Weak	-	n.d.	n.d.	n.d.			n.d.
Adenosine	++	++	n.d.	n.d.	n.d.			n.d.
2'-Deoxyadenosine	++	+	+	+	++	+++	++	++
Inosine	++	++	n.d.	n.d.	n.d.			n.d.
Tween-40	Weak	-	n.d.	n.d.	n.d.			n.d.
Tween-80	Weak	-	n.d.	n.d.	n.d.			n.d.

Table S1. Continued.

Carbon source	Ability to oxidize different carbon sources under anaerobic conditions examined using BIOLOG technology		Ability to grow on selected carbon sources under aerobic conditions measured by OD ₆₀₀ values ^a after 16–18 h of growth		Ability to grow on selected carbon sources under anaerobic conditions in medium containing FeOOH measured by OD ₆₀₀ values ^a and presence of Fe ²⁺ after 5 days of incubation ^b			
	POL1	POL2	POL1	POL2	POL1		POL2	
					Growth	Fe(II)	Growth	Fe(II)
Peptone	n.d.	n.d.	+++	+++	++	++	++	++
L-Asparagine	Weak	weak	n.d.	n.d.	n.d.		n.d.	
L-Glutamine	Weak	weak	n.d.	n.d.	n.d.		n.d.	
Glycyl-L-glutamic acid	Weak	-	n.d.	n.d.	n.d.		n.d.	
L-Serine	Weak	weak	n.d.	n.d.	n.d.		n.d.	
L-Threonine	Weak	weak	n.d.	n.d.	n.d.		n.d.	
L-Alanine	Weak	weak	n.d.	n.d.	n.d.		n.d.	
L-Glycine	Weak	weak	n.d.	n.d.	n.d.		n.d.	
L-Proline	Weak	-	n.d.	n.d.	n.d.		n.d.	
L-Histidine	Weak	-	n.d.	n.d.	n.d.		n.d.	
L-Isoleucine	Weak	weak	+	+	+	+	+	+
L-Leucine	weak	weak	n.d.	n.d.	n.d.		n.d.	
L-Lysine	Weak	-	n.d.	n.d.	n.d.		n.d.	
L-Methionine	Weak	-	n.d.	n.d.	n.d.		n.d.	
L-Ornithine	Weak	weak	n.d.	n.d.	n.d.		n.d.	
L-Phenylalanine	Weak	-	n.d.	n.d.	n.d.		n.d.	
L-Valine	Weak	-	+	+	+	+	+	+
D,L-Octopamine	Weak	-	n.d.	n.d.	n.d.		n.d.	
L-Arginine	Weak	-	n.d.	n.d.	n.d.		n.d.	
Glycine	Weak	-	n.d.	n.d.	n.d.		n.d.	
L-Lyxose	Weak	-	n.d.	n.d.	n.d.		n.d.	
2-Aminoethanol	Weak	-	n.d.	n.d.	n.d.		n.d.	
Dihydroxyacetone	Weak	-	n.d.	n.d.	n.d.		n.d.	

n.d., not determined.

“weak” in the BIOLOG tests means weak positive signal; + and ++, positive signals; -, negative signal.

^a- means OD₆₀₀ = 0, + means OD₆₀₀ < 0.2; ++ means 0.6 > OD₆₀₀ > 0.3; +++ means OD₆₀₀ > 0.8.

^bPresence of Fe²⁺ was confirmed in reaction with ferrozine: + means light purple color (OD₅₆₂ < 0.5); ++ means purple color (1 > OD₅₆₂ > 0.5), +++ means dark purple color (OD₅₆₂ > 1).